



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

COST SAVING CAMPAIGN

This report submitted in accordance with requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor Degree of Manufacturing Engineering (Manufacturing Process) with Honours.

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2011



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

BORANG PENGESAHAN STATUS LAPORAN PROJEK SARJANA MUDA

TAJUK: Cost Saving Campaign

SESI PENGAJIAN: 20010/11 Semester 2

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I hereby, declared this report entitled “Cost Saving Campaign” is the results of my own research except as cited in references.

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APPROVAL

This report is submitted to the Faculty of Manufacturing Engineering of UTeM as a partial fulfillment of the requirements for the degree of Bachelor of Manufacturing Engineering (Manufacturing Process) with Honours. The members of the supervisory committee are as follow:

Supervisor

.....

Co-Supervisor

.....

ABSTRACT

Cost saving campaign is the one of the methods that is using to minimize, reducing and controlling the some aspects to eliminating the wastes. The campaign will be done at Universiti Teknikal Malaysia Melaka (UTeM). The research started by observing the target area of research is Fakulti Kejuruteraan Pembuatan (FKP) building. The objectives of the campaign are to study lean operation and inventory management, and to manage and control the usage of raw material in FKP Store and wastes in FKP laboratories. In addition, there are several methods in lean manufacturing that will be implemented in FKP to succession the campaign. There are several sources that are used to attract and promote the campaign by distributing the flyers, 5'S activities campaign and do patrol check to make sure this project are acknowledge by people and going smoothly. The observation are done by do patrol check in FKP continuously to ensure the improvement. The data analyses are being constructed from the observation. Hopefully, the campaign are going to succeed and can be followed by committee of UTeM.

ABSTRAK

“Cost Saving Campaign” atau lebih tepat lagi kempen penjimatan kos adalah salah satu kaedah yang digunakan untuk meminimumkan, mengurangkan dan mengawal beberapa aspek untuk menghapuskan pembaziran. Kempen ini akan dilancarkan di Universiti Teknikal Malaysia Melaka (UTeM). Kempen ini bermula dengan mengadakan tinjauan di sekitar area yang di sasarkan. Bangunan Fakulti Kejuruteraan Pembuatan (FKP) adalah kawasan kempen ini akan dilancarkan. Objektif-objektif dalam kempen ini adalah belajar dan mengetahui pengurusan inventori dan operasi “lean”, dan mengurus dan mengawal bahan mentah dalam FKP stor. dan mengawal pembaziran yang berlaku di makmal FKP. Selain itu, terdapat beberapa kaedah “lean manufacturing” yang akan dilaksanakan dalam mejayakan kempen ini. Terdapat beberapa bahan yang akan digunakan bagi menarik minat orang ramai dan menggalakkan penyertaan daripada pelajar-pelajar dan staf-staf UTeM dengan mengagihkan risalah-risalah, mengadakan kempen aktiviti “5’S” dan mengadakan “patrol ckeck” untuk memastikan kempen ini dapat menarik minat orang ramai dan berharap kempen ini akan berjalan dengan lancar. Pemerhatian akan dijalankan dengan mengadakan “patrol check” di bangunan FKP secara berterusan untuk memastikan peningkatan demi peningkatan berlaku. Analisis data akan dibina dari pemerhatian yang telah dilakukan. Harapan semoga kempen ini dapat dilakukan dengan jayanya dan boleh diikuti oleh semua kakitangan UTeM. Sama-sama kita mengurangkan pembaziran dan sekaligus menanamkan sifat berjimat-cermat dalam semua aspek.

ACKNOWLEDGEMENT

In the name of Allah the Almighty and Most Merciful.....

First and foremost, I would like to take opportunity to express my appreciation to my supervisor, Dr. Mohamad Bin Minhat and co-supervisor, Mr. Ammar Bin Abd.Rahman who have helped me a lot by sharing their knowledge and giving me useful guide and advises for the project. During the duration of this project, Dr Mohamad and Mr Ammar have given their full effort in encouraged me to excel in this project. Besides that, I would like to thank to all technicians who has been a great help to me throughout this project.

DEDICATION

For my beloved family, your love and support are my greatest inspiration. To my friends, for your sacrifices, encouragement and support. May Allah bless all of you.

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CHAPTER 1

INTRODUCTION

This chapter contains the overview of the cost saving campaign in Fakulti Kejuruteraan Pembuatan (FKP). The problem statement and objective of the study are also included. It is followed by the scope, and structure of the project.

1.1 Background

The definition of saving by referring to lean dictionary is “continuous improvement focuses on cost reduction” and campaign can be defined as “organized course of action” as referring the dictionary Oxford (3rd edition). However, the words of saving campaign can be summarized as continuous improvement focuses on cost reduction can be conducted by launching a campaign. This project is the one of methods that is using to minimize, reducing and controlling the wastes in FKP laboratories.

In Japanese, waste is known as “Muda”. According to Taj and Berro(2005), waste is anything other than minimum amount of equipments, materials, parts, and working time that are absolutely essential to production. Waste elimination is one of the most effective ways to increase the profitability of any business.

To eliminate waste, it is important to understand exactly what waste is and where it exists. For each waste, there is a strategy to reduce or eliminate its effect on a company, thereby improving overall performance and quality. Cost control is required for every type of project whatever the nature of the company, but there is no doubt that by applying some of the less-well-known techniques such as network

analysis and earned value analysis, performance and control can be enhanced. (Lester, 2006)

There are eight wastes as in (Table 1.1) consist of:

Table 1.1: The list of eight wastes (Taj and Berro, 2005)

NO	TYPE OF WASTES	DESCRIPTION
01	Motion	<ul style="list-style-type: none"> • Movement of people that does not add value.
02	Waiting Time	<ul style="list-style-type: none"> • Idle time created when material, information, people or equipment is not ready.
03	Correction	<ul style="list-style-type: none"> • Work that contains defects, errors, rework mistakes or lacks something necessary.
04	Over-processing	<ul style="list-style-type: none"> • Effort that adds no value from customer's viewpoint.
05	Over-production	<ul style="list-style-type: none"> • Producing more than the customer need right now.
06	Transportation	<ul style="list-style-type: none"> • Movement of product that does not add value
07	Inventory	<ul style="list-style-type: none"> • More materials, parts or products on hand than the customer needs.
08	Knowledge	<ul style="list-style-type: none"> • People doing the work are not confident about the best way to perform tasks.

Lean manufacturing is the one of concept available that can be applied in the cost saving campaign. Lean Manufacturing is an operational strategy oriented toward achieving the shortest possible cycle time by eliminating waste. Waste elimination is one of the most effective ways to increase the profitability of any business. Processes either add value or waste to the production of a good or service.

However, this project only focused on minimizing, reducing and controlling the several wastes in FKP laboratories. This project started by observing the selected area.

1.2 Problem Statement

Basically, this project desired to reduce, minimize and control the wastes that happen in FKP laboratories. The FKP Store, Machine Shop and Material lab will be selected as the target area. The problems faced by FKP Store are; there is no systematic system that controlling the inventory, and incompatible layout. The 5'S methods are not implemented thoroughly in FKP laboratories that cause certain areas are not managed properly. In addition, the scraps and unnecessary items are not organized nicely. The unnecessary items are been thrown away in the area behind the laboratories without notification that the items want to be recycled. All these problems can increase the cost. From this project, the cost can be reduced by applying several methods to control, minimize and reduce the wastes. From the patrol check that will be done twice a month, it will help in constructing ideas on how to launch and implement the campaign properly.

1.3 Objectives

This project is done by launching the cost saving campaign in UTeM. The objectives of carrying out this project are:

- i. To study the lean operations and inventory management;
- ii. To manage and control the usage of raw material in FKP store;
- iii. To apply several methods to reduce the cost in FKP laboratories; and
- iv. To improve the condition of FKP laboratories.

1.4 Scope

This project is a campaign to reduce the cost of inventory in FKP store. It will emphasize focus primarily in reducing or cutting cost by controlling the usage of raw material, machines tool uses, and stationeries in FKP. There are several methods that can be applied to achieve the objectives of this project.

1.5 Writing Structure

Chapter 1, discussed about background of the project, problem statement, objectives, scope of study, and writing structure. For the chapter one is the introduction for the project.

Next, Chapter 2, discussed about the literature review. For the literature review, need to summarize the journals on cost saving campaign and method can be use to achieve the campaign. It also must included summarize and find the solution to reducing the cost in FKP.

Chapter 3, discussed about the methodology. The methodology is the step and method used to complete the report. In this part, the flow chart from the beginning until the end of the project. This part also discussed the method used to cover the cost saving campaign.

Chapter 4 discussed about the result and discussion of this project. Lastly, the conclusion will be discussed in Chapter 5.

CHAPTER 2

LITREATURE REVIEW

This chapter contains the theory of the fundamental involved in the study. Besides that, the related journals are also included. At the end of this chapter, a summary of the study is included.

2.1 The History of Lean Manufacturing

The roots of lean manufacturing originate with early automobile manufacturing. The master craftsmen that first built individual cars possessed a wide range of skills and abilities, but with low efficiency and at high cost. Henry Ford recognized these limitations and broke the assembly process down into 30-second tasks, which were performed almost a thousand times a day .In the 1950's, Eiji Toyoda and Taiichi Ohno merged the knowledge and skill of master craftsmen with the standardization and efficiency of the moving assembly line and added the concept of teamwork to create the Toyota Production System (TPS). John Krafcik introduced the term “lean production system” in 1988 in his review of the Toyota Production System, and the term “lean manufacturing” was popularized by Womack et al. (1990), in *The Machine that Changed the World*. (Worley and Doolen, 2006)

2.2 Lean Manufacturing

Lean manufacturing has many definitions associated with it. Some researchers provide definitions specific to manufacturing process while others employ a more general definition that could be applied to variety of industries. Following to Worley,

(2004) the lean was defined as the systematic removal of waste by all members of the organization from all areas of the value stream.

Lean manufacturing is a performance-based process used in manufacturing organizations to increase competitive advantage. The basics of lean manufacturing employ continuous improvement processes to focus on the elimination of waste or non-value added steps within an organization. The challenge to organizations utilizing lean manufacturing is to create a culture that will create and sustain long-term commitment from top management through the entire workforce. (H. McGivern and Striber, 2000).

Lean manufacturing techniques are based on the application of five principles to guide management's actions toward success:

- **Value:** The foundation for the value stream that defines what the customer is willing to pay for.
- **The Value Stream:** The mapping and identifying of all the specific actions required to eliminate the non-value activities from design concept to customer usage.
- **Flow:** The elimination of all process stoppages to make the value stream “flow” without interruptions.
- **Pull:** The ability to streamline products and processes from concept through customer usage.
- **Perfection:** The ability to advocate doing things right the first time through the application of continuous improvement efforts.

Following to Alavi,(2003) Lean is often associated with benefits such as reduced inventory, reduced manufacture times, increase quality, increase flexibility, and increased customer satisfactions. The term “Lean manufacturing” is represented half the human effort in the company, half the manufacturing space, half the investment in tools, and half the engineering hours to develop a new product in half the time.

2.2.1 The Toyota Approach

According to Stevenson,(2009) many of the methods that are common to learn operations were developed as part of Japanese car maker Toyota’s approach to manufacturing. Below are senses of the approach from some of the terms commonly associated with lean operations. Table 2.1 shows the list of terms Toyota approach according to Stevenson (2009).

Table 2.1: List of terms Toyota approach. (Stevenson, 2009)

Terms	Description
Muda	Waste and inefficiency. Perhaps the driving philosophy. Waste and inefficiency can be minimized by using the following tactics.
Kanban	A manual system used to controlling the movement of parts and materials that responds to signals of the need for delivery of parts or materials. This applies both to delivery to the factory and delivery to each workstation. The result is the delivery of a steady stream of containers of parts throughout the workday. Each container holds a small supply of parts or materials. News containers are delivered to replace empty containers.
Pull System	Replacing material or parts based on demand; produced only what needed.
Heijunka	Variations in production volume lead to waste. The work load must be leveled; volume and variety must be averaged to achieve a steady flow of work.
Kaizen	Continuous improvement of the system. There is always room for improvement, so this effort must be ongoing.
Jidoka	Quality at the source. Each worker is expected to perform ongoing quality assurance. The objective is to avoid passing defective products to following work stations, and to make workers aware of quality.
Poke-yoke	Safeguards built into a process to reduce the possibility of committing an error.
Team concept	Use small teams of workers for process improvement.

2.2.1.1 Muda

To eliminate waste, it is important to understand exactly what waste is and where it exists. While products significantly differ between factories, the typical wastes found in manufacturing environments are quite similar. For each waste, there is a strategy

to reduce or eliminate its effect on a company, thereby improving overall performance and quality. (The Manufacturing 7 Wastes,2003)

Following to Taj,(2006) the eight wastes as in Table 2.2 consist of:-

Table 2.2: The list of Eight Wastes.(Taj and Berro,2006)

NO	TYPE OF WASTES	DESCRIPTION
01	Motion	<ul style="list-style-type: none"> • Movement of people that does not add value.
02	Waiting Time	<ul style="list-style-type: none"> • Idle time created when material, information, people or equipment is not ready.
03	Correction	<ul style="list-style-type: none"> • Work that contains defects, errors, rework mistakes or lacks something necessary.
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08	Knowledge	<ul style="list-style-type: none"> • People doing the work are not confident about the best way to perform tasks.

Waste sources are all related to each other and getting rid of one sources of waste can lead to either elimination of, or reduction in others. Perhaps the most significant source of waste is inventory. Work-in-process (work-processing) and finished parts inventory do not add value to a product and they should be eliminated or reduced. When inventory is reduced, hidden problems can appear and action can be taken immediately.

2.2.1.2 Kaizen

Following the article KAIZEN, the key to understanding Japanese Success, Kaizen is a Japanese term that means continuous improvement, taken from words ('kai'), which means continuous and ('zen') which means improvement. Some translate 'kai' to mean change and 'zen' to mean good, or for the better.

Kaizen starts with a problem with the recognition that a problem exists. Where there are no problems, there is no potential for improvement. A problem in business is anything that inconveniences people downstream, either people in the next process or ultimate customers.

To implementation of Kaizen, the standardization is the way of spreading the benefits of improvement throughout the organizations. Everyone must be mindful of the standard-even management.

In addition, a team is needed to be set up to look the improvement of Kaizen in workplace. The employees within the Kaizen team need to be trained in Kaizen logic. The underlying of Kaizen is that it makes employees become aware that by using the Kaizen logic to improve a process, results in the business becoming more successful, which lends itself to meaning more job security for the employee.

2.3 Introduction of 5S

Osada (1991) refers to 5S as the five keys to the total quality environment. 5s is a system to reduce waste and optimize productivity and quality through maintaining an orderly workplace and using visual cues to achieve more consistent operational result. The practice of 5s aims to implant the values of organization, neatness, cleaning, configuration, and it is typically the first lean method implemented by firms. (Bayo-Moriones et al, 2010)

2.3.1 5s Methods

5S implementation methodology is a system to reduce workplace waste and optimize productivity by maintaining an orderly workplace. The use of visual reminders helps to achieve consistent improvements as well. 5S Implementation "cleans up" and organizes the workplace, without changing its existing configuration, and it is typically the first lean method which an organization puts into effect. Figure 2.1 shows the 5's methodology

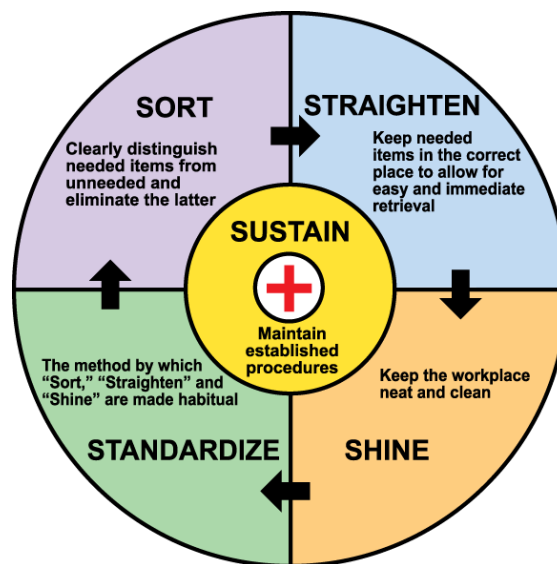


Figure 2.1: The 5s Methodology. (<http://www.lean.state.mn.us>, 2010)

The 5S pillars, Sort, Straighten, Sweep, Standardize, and Sustain, provide a methodology for organizing, cleaning, developing, and sustaining a productive work environment. This lean manufacturing method encourages workers to improve their working conditions and helps them to learn to reduce waste, unplanned downtime, and in-process inventory.

2.3.2 The Approach to 5S Implementation

5S is a cyclical methodology: sort, straighten, sweep, standardize, and sustain the cycle. This results in continuous improvement. It is a never ending process that gradually improves everything it touches.

2.3.2.1 Sort

This focuses on identifying all unnecessary items from the workplace which are not needed for day to day operations. These items receive a red tag and are placed in a central location for everyone to see and decide what to do with. Many times these are useful items, but used so rarely that they need to be discarded, given away or moved to a storage area. It is surprising how much space can be liberated from just this one process. Vast amounts of valuable floor space suddenly become available for more productive work.

2.3.2.2 Straighten

Once sorting has taken place, it will create efficient storage methods item can be easy to locate and use, as well as put away. This would include labeling drawers, tool racks, boxes, shelves, etc. The sorting method will define areas such as storage, first-aid, shipping, etc. By applying the sorting, the employees can keep a workplace orderly and efficient.

2.3.2.3 Sweep

Sweep means to clean, to thoroughly remove clutter and fix things. A daily follow-up cleaning is essential in order to sustain the new improvements. Everyone likes working in a clean environment, plus it often happens that damaged wires, pipes, electrical outlets, etc. are discovered and repaired. This is also a safety feature of 5S. It is also a good idea to establish targets before beginning the sweep process. This helps keep everyone focused and accountable.

2.3.2.4 Standardize

Once the first three 5S's have been implemented, the next pillar is to standardize the best practices in the work area. Individuals need to be assigned responsibility for